

WHAT IS CLAIMED IS:

- 1           1.       A method, comprising:  
2           receiving an I/O request to an object in storage;  
3           defragmenting the object in storage so that blocks in storage including the object  
4           are contiguous in response to receiving the I/O request; and  
5           executing the I/O request with respect to the object in storage.
  
- 1           2.       The method of claim 1, wherein the I/O request is executed with respect to  
2           the object after defragmenting the object.
  
- 1           3.       The method of claim 1, further comprising:  
2           determining whether an amount of fragmentation of the object in the storage  
3           exceeds a fragmentation threshold in response to receiving the I/O request, wherein the  
4           object is defragmented if the amount of fragmentation exceeds the fragmentation  
5           threshold.
  
- 1           4.       The method of claim 1, further comprising:  
2           determining whether a user settable flag indicates to perform defragmentation in  
3           response to receiving the I/O request, wherein the object is defragmented if the flag  
4           indicates to perform defragmentation.
  
- 1           5.       The method of claim 4, further comprising:  
2           executing the I/O request without performing defragmentation if the flag does not  
3           indicate to perform defragmentation.
  
- 1           6.       The method of claim 1, further comprising:  
2           determining at least one logical partition including the object, wherein the object  
3           is defragmented if the object is within one logical partition.

1           7.       The method of claim 1, further comprising:  
2           determining whether the object is read-only, wherein the object is defragmented if  
3           the object is not read-only.

1           8.       The method of claim 1, wherein the operation of defragmenting the object  
2           in storage is performed by a storage controller managing I/O requests to the storage.

1           9.       The method of claim 1, wherein the operation of defragmenting the object  
2           in storage is performed by a device driver for the storage providing an interface to the  
3           storage.

1           10.      A system in communication with storage, comprising:  
2           circuitry enabled to:  
3               (i) receive an I/O request to an object in the storage;  
4               (ii) defragment the object in storage so that blocks in storage including the  
5           object are contiguous in response to receiving the I/O request; and  
6               (iii) execute the I/O request with respect to the object in storage.

1           11.      The system of claim 10, wherein the I/O request is executed with respect  
2           to the object after defragmenting the object.

1           12.      The system of claim 10, wherein the circuitry is further enabled to:  
2           determine whether an amount of fragmentation of the object in the storage  
3           exceeds a fragmentation threshold in response to receiving the I/O request, wherein the  
4           object is defragmented if the amount of fragmentation exceeds the fragmentation  
5           threshold.

1           13.      The system of claim 10, wherein the circuitry is further enabled to:  
2           determine whether a user settable flag indicates to perform defragmentation in  
3           response to receiving the I/O request, wherein the object is defragmented if the flag  
4           indicates to perform defragmentation.

1           14.     The system of claim 13, wherein the circuitry is further enabled to:  
2           execute the I/O request without performing defragmentation if the flag does not  
3           indicate to perform defragmentation.

1           15.     The system of claim 10, wherein the circuitry is further enabled to:  
2           determine at least one logical partition including the object, wherein the object is  
3           defragmented if the object is within one logical partition.

1           16.     The system of claim 10, wherein the circuitry is further enabled to:  
2           determine whether the object is read-only, wherein the object is defragmented if  
3           the object is not read-only.

1           17.     The system of claim 10, wherein the circuitry is implemented in a storage  
2           controller managing I/O requests to the storage, wherein operation of defragmenting the  
3           object in storage is performed by the storage controller.

1           18.     The system of claim 10, wherein the circuitry is implemented in a device  
2           driver interfacing between an operating system and the storage, and wherein the  
3           operation of defragmenting the object in storage is performed by the device driver.

1           19.     A system, comprising:  
2           storage;  
3           a storage controller coupled to the storage, wherein the storage controller is  
4           enabled to:  
5                   (i) receive an I/O request to an object in the storage;  
6                   (ii) defragment the object in storage so that blocks in storage including the  
7           object are contiguous in response to receiving the I/O request; and  
8                   (iii) execute the I/O request with respect to the object in storage.

1           20.     The system of claim 19, wherein the storage controller is further enabled  
2           to:

3           determine whether an amount of fragmentation of the object in the storage  
4 exceeds a fragmentation threshold in response to receiving the I/O request, wherein the  
5 object is defragmented if the amount of fragmentation exceeds the fragmentation  
6 threshold

1           21.    The system of claim 19, wherein the storage controller and storage device  
2 are included in a same housing.

1           22.    The system of claim 19, further comprising:  
2           a processor; and  
3           a memory enabled to store the I/O request before the I/O request is received by  
4 the storage controller.

1           23.    An article of manufacture in communication with storage, wherein the  
2 article of manufacture is enabled to:  
3           receive an I/O request to an object in storage;  
4           defragment the object in storage so that blocks in storage including the object are  
5 contiguous in response to receiving the I/O request; and  
6           execute the I/O request with respect to the object in storage.

1           24.    The article of manufacture of claim 23, wherein the I/O request is  
2 executed with respect to the object after defragmenting the object.

1           25.    The article of manufacture of claim 23 further enabled to:  
2           determine whether an amount of fragmentation of the object in the storage  
3 exceeds a fragmentation threshold in response to receiving the I/O request, wherein the  
4 object is defragmented if the amount of fragmentation exceeds the fragmentation  
5 threshold.

1           26.    The article of manufacture of claim 23 further enabled to:  
2           determine whether a user settable flag indicates to perform defragmentation in  
3 response to receiving the I/O request, wherein the object is defragmented if the flag  
4 indicates to perform defragmentation.

1           27..   The article of manufacture of claim 26 further enabled to:  
2           execute the I/O request without performing defragmentation if the flag does not  
3 indicate to perform defragmentation.

1           28.    The article of manufacture of claim 23 further enabled to:  
2           determine at least one logical partition including the object, wherein the object is  
3 defragmented if the object is within one logical partition.

1           29.    The article of manufacture of claim 23 further enabled to:  
2           determine whether the object is read-only, wherein the object is defragmented if  
3 the object is not read-only.

1           30.    The article of manufacture of claim 23 wherein the operation of  
2 defragmenting the object in storage is performed by a storage controller managing I/O  
3 requests to the storage.

1           31.    The article of manufacture of claim 23, wherein the operation of  
2 defragmenting the object in storage is performed by a device driver for the storage  
3 providing an interface to the storage.